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SPHAGNUM RICHARDSIANUM, A NEW SPECIES FROM MEXICO

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Through the courtesy of A. J. Sharp of the University of Tennessee, I have been able to study a goodly number of collections of *Sphagnum* from the Sierra de Juárez in the state of Oaxaca in eastern Mexico. Among them were found specimens of *Sphagnum tenellum* Ehrh. *ex* Hoffm., reported elsewhere (Crum, 1975) as a range extension of considerable interest, as well as three collections of an interesting *Sphagnum* new to science, described below.

Sphagnum richardsianum Crum, sp. nov. Figs. 1–5.

Plantae graciles, molles, glauco-virides vel apice flavo-fuscae. Hyalodermis caulis stratis 1–2, sine poris. Folia caulina 1.6–2.2 mm longa, plus minus concava, late oblongo-ovata, apice late rotundato-truncata dentataque, anguste limbata, ad basim multifibrosa; cellulae hyalinae raro septatae, utroque latere foliorum superiore parte poris minutis paucis in cellularum angulis, saepe pseudoporis in series breves ad commissuras instructae. Fasciculi ramorum ramis 3. Folia ramulina 1.5–2 mm longa, valde concava, ovata, apice rotundato-truncata, dentata, marginibus anguste limbatis, late incurvatis; cellulae hyalinae multifibrosae, raro septatae, exteriore folii superficie poris minutissimis paucis in angulis cellularum et ad commissuras et pseudoporis in series breves ad commissuras instructae, superficie interiore pauci- vel aporosae; cellulae chlorophylliferae sectione transversali rectangulares, utroque latere foliorum liberae.

Plants relatively small, soft, pale, green or yellowish, sometimes orange-brown above. Cortical cells of stem moderately differentiated in 2 layers, short-rectangular, 2–3:1, without pores or fibrils. Stem and branch leaves essentially isomorphous: Stem leaves somewhat concave, 1.6–2.2 mm long, ovate-elliptic, broadly rounded to truncate at the apex, bordered by 2–3 rows of linear cells, entire except for coarse dentations across the apex; hyaline cells fibrillose throughout, not or rarely 1-divided, on the outer surface near the leaf apex with 3–6 very small, rounded, unringed pores, mostly at corners and often few to numerous, sometimes crowded pseudopores, in the lower part of the leaf with 1–4 small, rounded pores at or near the corners and no pseudopores, on the inner surface near the apex with a few small, rounded, unringed pores or pseudopores at the corners and elsewhere along the commissures, in the lower portions with 1–5 small, rounded-elliptic pores mainly at the corners, very numerous along the commissures at the basal margins of the leaf. Branches in fascicles of 3 (2 spreading and 1 pendent or 1 spreading, 1 ± deflexed and tapered, and 1 clearly pendent); cortical cells in 1 layer, the retort cells with inconspicuous necks. Branch leaves deeply concave when moist, less so when dry, erect or erect-spreading, not at all secund, 1.5–2 mm long, ovate, bordered by 2–3 rows of linear cells, dentate across the apex; hyaline cells bulging on both surfaces, fibrillose throughout, undivided or in some leaves occasional cells repeatedly divided lengthwise, on the outer surface near the apex with 1–7 small, rounded-elliptic, ± ringed pores at the corners or scattered

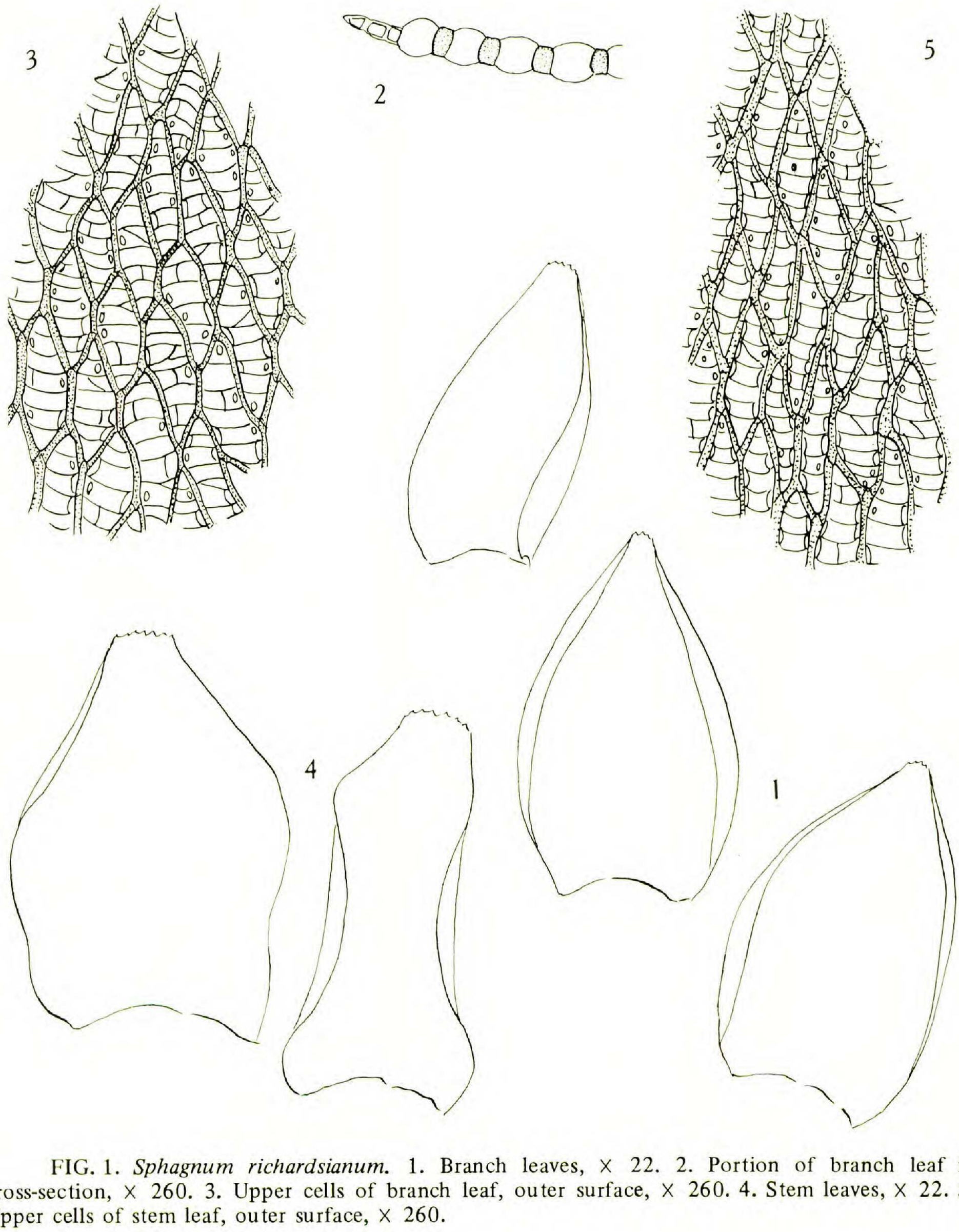

FIG. 1. *Sphagnum richardsianum.* 1. Branch leaves, × 22. 2. Portion of branch leaf in cross-section, × 260. 3. Upper cells of branch leaf, outer surface, × 260. 4. Stem leaves, × 22. 5. Upper cells of stem leaf, outer surface, × 260.

along the commissures, also with numerous pseudopores, on the inner surface with pores very few, small, and rounded, or more often none, with some pseudopores; in section green cells truncately elliptic or rectangular, broadly and equally exposed on both surfaces or with a slightly broader exposure on the outer surface.

MEXICO: OAXACA: Cloud forest, along Highway 175, east side of Sierra de Juárez, between Oaxaca and Tuxtepec, *D. K. Smith, A. J. & E. B. Sharp, S. Nakanishi, M. Manuel, & H. J. Webster 358A, 358Bc* (TYPE), & *359A,* December 26, 1970 (MICH).

Outstanding features of this species include, first and foremost, the essentially isomorphous nature of stem and branch leaves. The stem leaves are broadly ovate-elliptic, somewhat concave, and broadly truncate or more or less rounded at a dentate apex. The margins are bordered by linear cells. the hyaline cells are fibrillose throughout. The pores are few and very small, but in the upper part of the leaf, on the outer surface, pseudopores may be quite numerous and sometimes crowded in commissural rows. The branch leaves are somewhat smaller, ovate, and deeply concave. The concavity obscures the fact that the apex is broad. The hyaline cells have rather few pseudopores even near the apex, although they are sometimes rather numerous.

The orange-brown coloration, the more or less equal exposure of green cells of branch leaves, and the occurrence of pseudopores in something of a beaded arrangement make a placement in the section Subsecunda possible. Because of leaves broadly pointed at the apex and not particularly concave when dry, there is some superficial likeness to *S. fitzgeraldii* of the section *Cuspidata,* a resemblance that is made more striking by the fact that pores are few (as in many of the *Cuspidata*). The true relationships may be found in the flora of southeastern Africa and Madagascar and Mauritius. Judging by Warnstorf's descriptions in the *Sphagnologia Universalis, S. oxycladum* Warnst. and its var. *mauritianum* (Warnst.) Warnst. and also *S. transvaaliense* C. M. *ex* Warnst. have similarly isomorphous leaves, fibrillose throughout and with few, very tiny pores. Of them, *S. oxycladum* var. *mauritianum* appears to be most like *S. richardsianum,* as the leaves are of a similar size and show some development of pseudopores in short series. It seems, however, that the green cells of the branch leaves are much narrower in sectional view.

The species has been named as a token of friendly regard for Donald Richards, who has long been interested in the Mexican flora and has collected mosses there and elsewhere in Middle America. Duplicates of the specimens cited above are to be found in the herbarium of the University of Tennessee.

LITERATURE CITED

Crum, H. 1975. Notes on the distribution of *Sphagnum tenellum.* Contr. Univ. Michigan Herb. 11(2): 85–87. Fig. 1–14.

Warnstorf, C. 1911. Sphagnales–Sphagnaceae (Sphagnologia Universalis). *In* A. Engler (ed.), Das Pflanzenreich. Vol. 51, iv + 546 pp. Leipzig.